

ORIGINAL ARTICLE

Three new species of *sanguinolenta*-group of the genus *Macrophya* (Hymenoptera: Tenthredinidae) from China

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Abstract *Macrophya opacifrontalis* Li, Lei & Wei, **sp. nov.**, *M. pseudofemorata* Li, Wang, & Wei, **sp. nov.**, and *M. huangi* Li & Wei, **sp. nov.** of the *sanguinolenta*-group of *Macrophya* (Hymenoptera: Tenthredinidae) from China are described. *M. opacifrontalis* and *M. pseudofemorata* belong to the *tongi*-subgroup, whereas *M. huangi* belongs to the *depressina*-subgroup. The division of the *tongi* and *depressina* subgroups and species inside are briefly discussed. Keys to all known species of the *tongi* and *depressina*-subgroups from China are provided respectively.

Key words Symphyta, Tenthredinoidea, Taxonomy.

1 Introduction

Macrophya Dahlbom, 1835, the third largest genus in Tenthredininae and the fourth largest of Tenthredinidae, contains 255 species worldwide (Li & Wei, 2013; Li *et al.*, 2013a, 2013b, 2013c). In China, 119 *Macrophya* species have been recorded (Wei *et al.*, 2006, 2013; Taeger *et al.*, 2010; Zhao *et al.*, 2010; Zhao & Wei, 2011; Zhu *et al.*, 2012; Li *et al.*, 2012, 2013a, 2013b, 2013c; Li & Wei, 2012, 2013; Wu *et al.*, 2012).

Macrophya includes 27 species-groups preliminary (unpublished): the *alba*-group, *apicalis*-group, *blanda*-group, *cinctula*-group, *coxalis*-group, *crassuliformis*-group, *duodecimpunctata*-group, *epinota*-group, *flavolineata*-group, *flavomaculata*-group, *formosana*-group, *histrio*-group, *imitator*-group, *jiuzhaina*-group, *ligustri*-group, *malaisei*-group, *montana*-group, *planata*-group, *pompilina*-group, *punctumalbum*-group, *regia*-group, *sanguinolenta*-group, *sheni*-group, *sibirica*-group, *tibiator*-group, *vittata*-group and *zhaoae*-group. The *sanguinolenta*-group is the largest group of *Macrophya*, containing 37 known species worldwide. It includes four subgroups, namely, *tongi*-subgroup, *koreana*-subgroup, *depressina*-subgroup, and *sanguinolenta*-subgroup. Currently, 32 species of this group are known in China (Li *et al.*, 2013c; Wei *et al.*, 2013). In this work, three new species from China are reported, the *tongi* and *depressina*-subgroups are diagnosed, and keys to the known species of both subgroups from China are individually provided.

2 Materials and methods

The specimens examined in this study, including all holotypes and paratypes of the new species, are deposited in the

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3 Taxonomy

3.1 The *tongi*-subgroup

Diagnosis. Body mainly black, without metallic tinged macula, antenna entirely black, hind femur with more or less reddish maculae, hind tibia entirely or largely black, and subapical and dorsal hind tibia with a white macula; posterior corner of metepimeron without distinct appendage.

The *tongi*-subgroup is characterized by the antennomeres entirely black, posterior corner of metepimeron without distinct appendage, hind femur with more or less reddish maculae, and hind tibia entirely black (if not entirely black, it with white macula dorsally).

Key to species of the *tongi*-subgroup from China

1. Hind tibia entirely black, dorsal side without white macula..... 2
Hind tibia largely black, dorsal side with distinct white macula subapically 4
2. Metabasitarsus distinctly dilated, compressed; dorsal head and thorax with dense and coarse punctures, without smooth interspaces; mesoscutellum entirely and all trochanters largely black; apex of mesopleuron clearly elevated, with blunt hip; fore wing with cell 2Rs clearly longer than cell 1Rs; serrulae of lancet flat, subbasal teeth minute, middle serrulae each with 1 proximal and 10 to 11 distal teeth. China (Gansu, Shaanxi, Hebei, Hubei) *M. incrassitarsalia* Wei & Wu, 2012
Metabasitarsus slender, not dilated or compressed..... 3
3. Dorsal frons sparsely and shallowly punctured, interspaces between punctures obvious, mesoscutellum roundly elevated, without protuberance, as high as the top of the mesonotum; posterior of the lateral sides of tergite 1 with small, white macula, not connected toward the middle; sheath slightly shorter than the metabasitarsus, distinctly extended to the apex of the abdomen, setae on sheath slightly curved in dorsal view; lancet slightly long, serrulae clearly protruded, subbasal teeth clear. Japan; China (Shandong).....
..... *M. femorata* Marlatt, 1898
Dorsal frons densely and coarsely punctured, without interspaces between punctures; mesoscutellum distinctly elevated, with tapered protuberance, higher than the top of the mesonotum; posterolateral tergite 1 with distinct, white maculae, connected and narrower toward the middle; sheath distinctly shorter than the metabasitarsus, not extended to the apex of the abdomen; lancet short, serrulae flat, subbasal teeth very fine. China (Hubei)..... *M. pseudofemorata* Li, Wang & Wei, sp. nov.
4. All trochanters of female and male entirely white; frons smooth, without distinct punctures; the mesoscutellum and dorsal side of hind tarsus of female with clear, white maculae, lateral tergites 2 to 5 with large, square, and white maculae; mesoscutellum and hind tarsus of male entirely black, posterolateral tergites 2 to 6 with small, white maculae. China (Gansu, Shanxi, Hebei).....
..... *M. leucotrochanterata* Wei & Li, 2012
Fore and middle trochanters in female and male entirely or partly black, hind trochanter entirely white 5
5. Labrum entirely white; clypeus largely white, basally with black maculae 6
Labrum largely black, ventrally with fine, white maculae; clypeus entirely black..... 7
6. Hind femur of female and male largely reddish brown, basally with black and narrow ring, apically with black maculae; fore and middle trochanters of male largely white, dorsally with small, black maculae. China (Shaanxi, Anhui, Hunan, Guangxi).....
..... *M. tongi* Wei & Ma, 1997
Hind femur of female largely dark reddish brown, basally with white maculae, apically with black maculae; male unknown. China (Guizhou)..... *M. lingyangi* Wei, 2005
7. Dorsal head strongly shiny, frons sparsely and shallowly punctured, largely smooth, without microsculpture; postocellar area and tegula entirely black; postocellar area twice broader than long; middle of mesoscutellum largely white; lateral tergite 1 without white macula, posterolateral tergites 3 to 5 with distinct, transverse, and white maculae, tergites 2 and 6 to 9 entirely black; serrulae of lancet flat, annular spine bands broad. Korea; East Siberia; China (Heilongjiang, Jilin, Liaoning, Gansu, Ningxia, Shaanxi, Shanxi, Henan)..... *M. vacillans* Malaise, 1931
Dorsal head less shiny, frons slightly densely and coarsely punctured, interspaces narrower than the diameter of punctures, with fine microsculpture; posterior margin of postocellar area and outer margin of tegula white; postocellar area 2.5 times broader than long; mesoscutellum entirely black; lateral tergite 1 with small, white macula; tergites 2 to 9 entirely black; serrulae of lancet protruding, annular spine bands narrow. China (Zhejiang, Jiangsu, Hunan, Jiangxi, Guizhou)..... *M. opacifrontalis* Li, Lei & Wei, sp. nov.

The *tongi*-subgroup contains eight species, six of which are from China. They are *M. tongi* Wei & Ma (Wei & Ma, 1997), *M. femorata*, *M. vacillans*, *M. linyangi* Wei (Wei, 2005), *M. incrassitarsalia* Wei & Wu (Wu *et al.*, 2012), and *M. leucotrochanterata* Wei & Li (Wu *et al.*, 2012). *M. femorata* Marlatt (Marlatt, 1898), *M. forsiusi* Takeuchi (Takeuchi, 1937), and *M. mikagei* Togashi (Togashi, 2005) are from Japan. *M. vacillans* Malaise (Malaise, 1931) is from North Korea and East Siberia. We report two new species here, namely *M. opacifrontalis* Li, Lei & Wei, **sp. nov.** and *M. pseudofemorata* Li, Wang & Wei, **sp. nov.**

3.2 The *depressina*-subgroup

Diagnosis. Body mainly black, without metallic tinge macula; hind tibia with more or less reddish maculae; antenna long and slender, antennomeres 3 to 7 usually with white maculae; posterior corner of metepimeron subquadrate, without distinct appendage; valvaceps of penis valve longer than broad in vertical view, with distinct ergot.

The *depressina*-subgroup is characterized by some antennomeres with white maculae, posterior corner of metepimeron without distinct appendage, and hind legs with more or less reddish maculae.

The *depressina*-subgroup are known from China, which includes seven species: *M. melanolabria* Wei (Wei & Nie, 1998), *M. melanoclypea* Wei (Wei & Chen, 2002), *M. rubitibia* Wei & Chen (Chen & Wei, 2002), *M. commixta* Wei & Nie (Wei & Nie, 2002), *M. leyii* Chen & Wei (Chen *et al.*, 2005), *M. depressina* Wei (Wei, 2005), and *M. coloritarsalina* Wei & Li (Li *et al.* 2013c). Here, another new species of this subgroup is described as *M. huangi* Li & Wei, **sp. nov.**

Key to species of the *depressina*-subgroup from China

1. Antennomeres 6 to 7 with white maculae 2
 Antennomeres 3 to 5 with white maculae 3
2. Clypeus entirely yellowish white; middle serrulae of female lancet each with 1 proximal and 11 to 12 distal teeth
 ***M. melanolabria* Wei, 1998**
 Clypeus largely black, middle part with transverse and white macula; middle serrulae of female lancet each with 1 proximal and 14 to 15 distal teeth ***M. melanoclypea* Wei, 2002**
3. Antennomeres distinctly dilated near middle; middle of abdominal tergites without line of white maculae, lateral sides of abdominal tergites 1 to 7 with distinct white maculae, white maculae smaller toward back; hind tibia and tarsus entirely reddish; subbasal teeth of the middle serrulae large ***M. commixta* Wei & Nie, 2002**
 Antennomeres dilated slightly near middle; middle of abdominal tergites with distinct line of white maculae; hind tibia and tarsus not entirely black, dorsal sides with distinct white maculae; subbasal teeth of the middle serrulae small 4
4. Hind femur and tibia with distinct, large reddish maculae 5
 Hind femur and tibia without reddish maculae, if with some reddish maculae but short. 6
5. Clypeus entirely black (some specimens with feeble, white maculae at center); face and frons below the top of the eyes in lateral view; lateral sides of abdominal tergite 1 without white macula ***M. rubitibia* Wei & Chen, 2002**
 Clypeus largely white, but basally with black maculae; face and frons as high as the top of the eyes in lateral view; lateral sides of abdominal tergite 1 with small, white maculae *M. leyii* Chen & Wei, 2005
6. Abdominal tergite 1 without lateral white macula; middle of abdominal tergites with distinct line of white maculae; posterior margin of pronotum with narrow maculae, not clear; prescutum entirely black ***M. huangi* Li & Wei, sp. nov.**
 Abdominal tergite 1 with distinct, lateral white maculae; middle of abdominal tergites without distinct line of white maculae; lateral corner of pronotum with clear, white maculae; prescutum with two narrow and long white maculae 7
7. Basal 2/5 of hind femur yellowish white, middle 2/5 reddish brown, apical 1/5 black; hind tibia black with a long subapical white stripe dorsally and with an obscure reddish tinge; hind tarsus black, apical half of basitarsus and dorsum of tarsomeres 2 to 4 white; petiole of anal cell in the fore wing 1.8 times as long as vein 1r-m, approximately 0.9 times as long as vein cu-a; antenna entirely black in male ***M. depressina* Wei, 2005**
 Basal half of hind femur yellowish white, apical half black, and ventral side with yellowish white band; apical half of hind tibia yellowish brown and basal half orange; hind tarsus yellow brown without black macula; petiole of anal cell in the fore wing twice as long as vein 1r-m, approximately 1.2 times as long as vein cu-a; middle antennomeres yellow white in male
 ***M. coloritarsalina* Wei & Li, 2013**

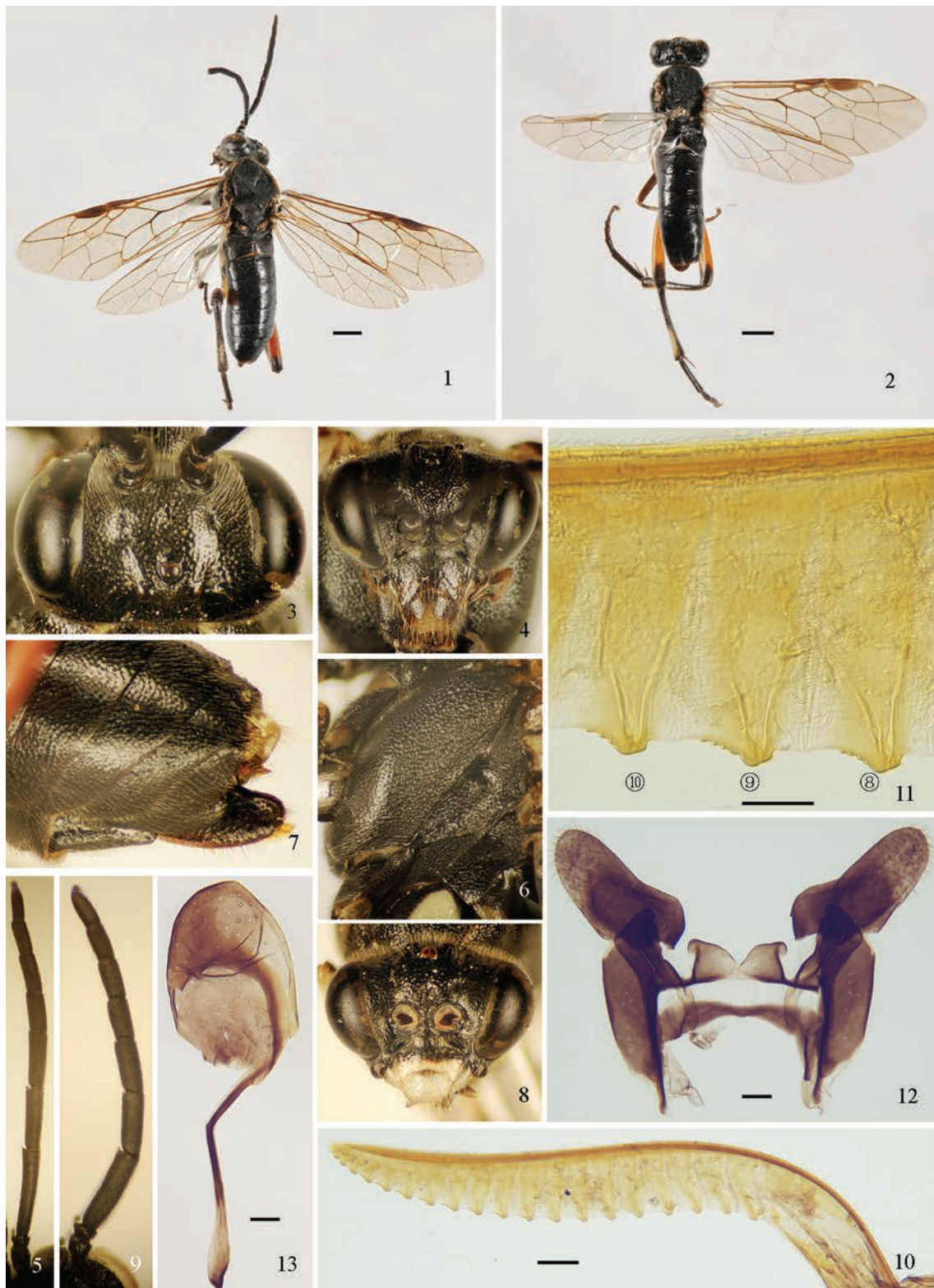
4 Description

4.1 *Macrophya opacifrontalis* Li, Lei & Wei, sp. nov. (Figs 1–13)

Female. Body length 10 mm to 13.5 mm. Body black, following parts white: basal half of the mandibles, apical small maculae of the labrum, posterior margin of the postocellar area, posterior margin of the pronotum, outer margin of the tegula, narrow edge of the posterior of tergite 1, small maculae on the lateral sides of tergite 1, tergite 10 entirely, base of hind coxa with a large oval macula on the outer side, hind trochanter, stripes on the apical half of the anterior of fore femur, apex of the anterior of middle femur with a small macula, anterior side of fore tibia, subapical middle tibia with a small dorsal macula, stripes on subapical 1/4 to 1/3 of dorsal side of hind tibia, and dorsal sides of fore and middle tarsi shortly; palp largely, fore and middle tarsi largely, pale brown; hind femur largely reddish brown, but apex and base with black maculae. Body hairs silver, setae on sheath black brown. Wings hyaline, without smoky macula, stigma and veins black brown (Fig. 1).

Dorsal head less shiny, frons slightly densely and coarsely punctured, interspaces between punctures slightly narrower than diameter of punctures, with fine microsculptures (Fig. 3); labrum and clypeus shiny, with some large and shallow punctures, surface with some fine microsculptures. Thorax less shiny, punctures on mesonotum about denser and smaller than punctures on head, interspaces broader than the diameter of punctures, with fine microsculptures; mesoscutellum shiny, apex with some large punctures, around with dense and small punctures; mesoscutellar appendage with distinct punctures and microsculptures; metascutellum less shiny, with some punctures and fine microsculptures; mesepisternum densely punctured, interspaces distinct, shiny; anepimeron with dense and rugose punctures and wrinkles; anterior 1/5 of katepimeron smooth and shiny, without punctures or microsculpture, posterior 4/5 of katepimeron with coarse and rugose punctures; metepisternum less shiny, minutely and densely punctured; anterior of metepimeron smooth, extra area with distinct punctures and microsculptures (Fig. 6). All abdominal tergites shiny, lateral tergite 1 with some punctures, medially nearly smooth; basal half of tergites 2 to 5 with minute and dense punctures, apical half with very sparse punctures; dorsal tergites 6 to 10 with dense punctures and fine microsculptures. Ventral side of hind coxa slightly minutely and densely punctured, interspaces broader than the diameter of punctures; outer side of hind coxa densely punctured, interspaces with fine microsculptures. Surface of sheath with very fine punctures and microsculptures.

Labrum slightly elevated, anterior margin truncated; clypeus flat, slightly broader than the distance between the lower corner of the eyes, lateral sides convergent forward, anterior margin roundly incised to approximately 2/5 length of clypeus, lateral corners obtuse (Fig. 4); malar space 0.5 times the diameter of the middle ocellus; frons elevated, ocellus slightly higher than the top of the eyes in lateral view; middle fovea shallow, long punctiform; lateral foveae slightly deep, furrow like; interocellar furrow distinct, postocellar furrow indistinct; POL:OOL:OCL = 6:12:9; postocellar area distinctly elevated, 2.5 times broader than long, anterior half of lateral furrow shallow, posterior half deep, slightly diverging posteriorly; head strongly narrowed behind eyes in dorsal view, occipital carina complete. Antenna slender, 1.5 times longer than the head and thorax together and as long as the abdomen; antennomere 2 as long as broad; antennomere 3, 1.5 times as long as antennomere 4 (25:17), 0.8 times as long as antennomeres 4 and 5 combined (35:32); antennomeres 4 to 8 not dilated and weakly compressed (Fig. 5). Mesoscutellum roundly elevated, without protuberance or carina, as high as the top of the mesonotum in lateral view; mesoscutellar appendage with obtuse carina; metascutellum with short and lower carina; dorsal-posterior platform of mesepimeron about as broad as the diameter of the middle ocellus; posterior corner of metepimeron square and without appendage; mesopleuron and metapleuron as shown in Fig. 6; the distance between cenchri thrice the breadth of a cenchrus. Inner tibia spur of hind leg approximately 0.65 times the length of the metabasitarsus (13:20); metabasitarsus slender, slightly longer than the following 4 tarsomeres combined (10:9); claw with inner tooth as long as outer tooth. Ovipositor sheath approximately 0.8 times as long as metabasitarsus (33:40), apical sheath slightly shorter than the basal sheath, apical margin roundish and narrow in lateral view (Fig. 7), setae on sheath curved and dense in dorsal view. Fore wing with vein cu-a joining cell 1M at basal 1/3, vein 2r joining cell 2Rs at apical 1/3, vein 1r-m slightly curved, vein 2r-m oblique, cell 2Rs slightly longer than cell 1Rs, petiole of anal cell slightly shorter than vein 1r-m; petiole of anal cell in the hind wing approximately 0.5 times as long as vein cu-a, vein cu-a slightly oblique. Lancet with 18 serrulae (Fig. 10), middle serrulae slightly oblique and protruding, middle serrulae each with 1 proximal tooth and 4 to 5 distal teeth, subbasal teeth distinct, annular spine bands narrow, spine sparse, 8th to 10th serrulae as shown in Fig. 11.



Figs 1–13. *Macrophyta opacifrontalis* Li, Lei & Wei, **sp. nov.** 1. Adult female, dorsal view. 2. Adult male, dorsal view. 3. Female head, dorsal view. 4. Female head, anterior view. 5. Female antenna. 6. Female mesopleuron and metapleuron. 7. Ovipositor sheath, lateral view. 8. Male head, anterior view. 9. Male antenna. 10. Lancet. 11. 8th–10th serrulae of lancet. 12. Gonoforceps. 13. Penis valve. Scale bars: 1, 2 = 1 mm, 11, 13 = 50 µm, 10, 12 = 100 µm.

Male. Body length 7.0 mm to 7.5 mm (Fig. 2); body color and structure similar to female, following parts white: labrum and apical third of clypeus (Fig. 8), fore and middle trochanters largely, except for black dorsal maculae; outer side of hind coxa entirely black; dorsally subapical 2/5 of the hind tibia with white macula; antenna slightly setiform as shown in Fig. 9; subgenial plate longer than broad, apical margin roundish; inner side of base of harpe distinctly extruded, weakly narrowed toward apex (Fig. 12), penis valve as shown in Fig. 13.

Holotype female, China, Zhejiang, Lin'an, Mt. Tianmu, 11 June 1993, Ming-Jiang Zhu leg. Paratypes: 1 female, China, Hunan, Sangzhi, Mt. Badagong, 1 May 2000, Mei-Cai Wei leg.; 1 male, China, Hunan, Sangzhi, Mt. Badagong, 30 April 2000, Wei Xiao leg.; 1 female, China, Hunan, Shimen, Mt. Huping, 30 April 2000, Yi-Hai Zhong leg.; 1 female, China, Guizhou, Mt. Fanjing, Yangaoping (27°55'N, 108°44'E; elev. 1750 m), 20–25 May 2008, Shuai-Guo Nie leg.; 1 male, China, Jiangxi, Mt. Guan, Donghe (elev. 430 m), 31 March 2009, Ling-Li Yi and Yi Li leg.; 1 female, China, Jiangsu, Jurong, Mt. Baohua, 14–15 April 2012, Jian-Yue Qiu leg., CSCS12071; 1 male, China, Nanjing, Pikou, Laoshan Forest Park, 8 April 2012, Jian-Yue Qiu leg., CSCS12070.

Distribution. China (Zhejiang, Jiangsu, Hunan, Jiangxi, Guizhou).

Individual variation. Lateral lobes of clypeus in female with fine, white maculae.

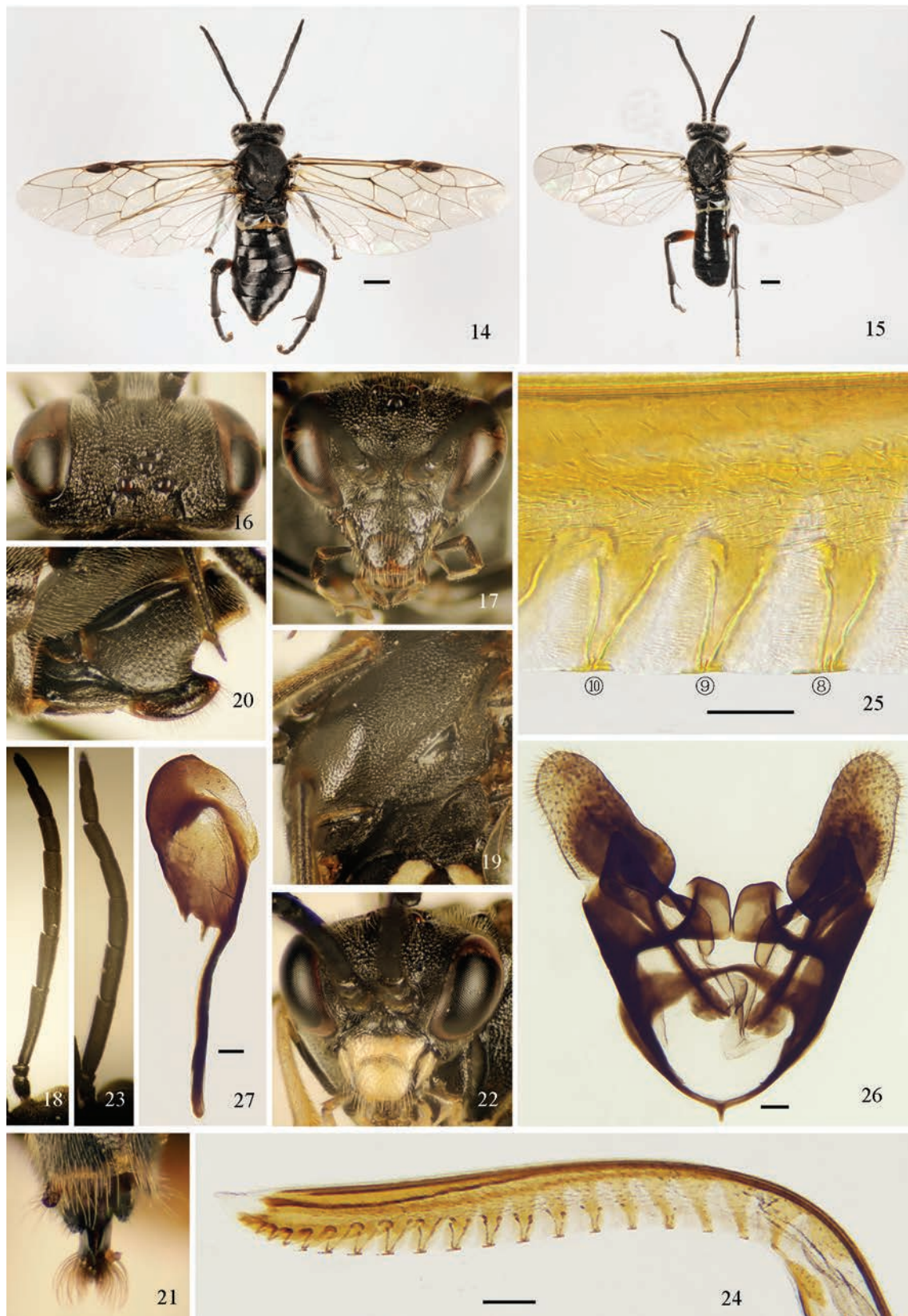
Etymology. The species is named after the densely and coarsely punctured frons.

Remarks. The new species is a member of the *tongi*-subgroup of the *sanguinolenta*-group and is similar to *M. vacillans* Malaise, 1931 from China. Compared with *M. vacillans*, *M. opacifrontalis* is characterized by dorsal head less shiny, frons slightly densely and coarsely punctured, interspaces narrower than diameter of punctures, with fine microsculpture; posterior margin of the postocellar area and outer margin of tegula white; postocellar area 2.5 times broader than long; mesoscutellum entirely black; lateral tergite 1 with small, white maculae; tergites 2 to 9 entirely black; serrulae of lancet protruding, annular spine bands narrow. In *M. vacillans*, dorsal head strongly shiny, frons sparsely and shallowly punctured, large region smooth, without microsculpture; postocellar area and tegula entirely black; postocellar area twice broader than long; mesoscutellum largely white medially; lateral tergite 1 without white maculae, postero-lateral tergites 3 to 5 with distinct, transverse, and white maculae, tergites 2 and 6 to 9 entirely black; serrulae of lancet flat, annular spine bands broad.

4.2 *Macrophya pseudofemorata* Li, Wang & Wei, sp. nov. (Figs 14–27)

Female. Body length 9 mm. Body black, palp largely pale brown, a small triangular macula of apical margin of labrum dark brown, following parts white: basal half of mandibles, posterior margin of postocellar area, posterior margin of pronotum, outer margin of tegula, apical margin of all coxae, apical half of the anterior side of fore femur, anterior fore tibia, ventrally most of the fore tarsus, apex of the middle tibia anteriorly, ventrally most of the middle tarsus, hind coxa with a large oval macula on the outer side, hind trochanter, posterior margin with narrow maculae and lateral corners with broad transverse maculae of abdominal tergite 1; hind femur largely dark reddish brown, base with narrow ring and apex black. Body hairs silver, setae on sheath black brown. Wings hyaline, without smoky macula, stigma, and veins black brown (Fig. 14).

Dorsal head less shiny, frons with distinctly dense and coarse punctures and microsculptures, without smooth interspaces between punctures (Fig. 16); labrum and clypeus less shiny, labrum with sparse and shallow punctures, clypeus with slightly dense and large punctures, microsculptures fine. Thorax less shiny, punctures on mesonotum smaller and denser than punctures on head, interspaces with fine microsculptures between punctures; mesoscutellum dim, apex with dense and coarse punctures; mesoscutellar appendage dim, with distinct punctures; metascutellum slightly coarsely punctured; mesepisternum less shiny, with dense and rugose punctures, interspaces narrow and smooth; anepimeron with rugose punctures and microsculptures; anterior 1/5 of katepimeron smooth and shiny, without puncture or microsculpture, posterior 4/5 of katepimeron with distinct punctures and microsculptures; metepisternum less shiny, lateral region of metepimeron minutely and densely punctured, microsculptures fine; ventral region of the metepimeron with a few punctures; metepimeron less shiny, with distinct punctures, interspaces with distinct microsculptures (Fig. 19). Abdominal tergite 1 shiny, laterally with some shallow punctures, medially with fine microsculptures; remainder of abdominal tergites less shiny, slightly densely and minutely punctured, microsculptures fine but distinct. Hind coxa and outer side of hind femur less shiny, slightly minutely and densely punctured, interspaces with fine microsculptures. Surface of sheath with some fine punctures and indistinct microsculpture.



Figs 14–27. *Macrophya pseudofemorata* Li, Wang & Wei, **sp. nov.** 14. Adult female, dorsal view. 15. Adult male, dorsal view. 16. Female head, dorsal view. 17. Female head, anterior view. 18. Female antenna. 19. Female mesopleuron and metapleuron. 20. Ovipositor sheath, lateral view. 21. Ovipositor sheath, dorsal view. 22. Male head, anterior view. 23. Male antenna. 24. Lancet. 25. 8th–10th serrulae of lancet. 26. Gonoforceps. 27. Penis valve. Scale bars: 14, 15 = 1 mm, 25, 27 = 50 μ m, 24, 26 = 100 μ m.

Middle of labrum slightly elevated, anterior margin truncated; clypeus flat, slightly broader than the distance between lower corner of eyes; lateral sides convergent forward, anterior margin deep and arcuate, incised to approximately 2/5 length of clypeus, lateral lobes slightly longer and acute (Fig. 17); malar space 0.5 times the diameter of the middle ocellus; frons flat, ocellus slightly higher than the top of the eyes in lateral view; middle fovea shallow, long punctiform; lateral foveae slightly deep, furrow like; interocellar furrow distinct, postocellar furrow indistinct; POL:OOL:OCL = 5.5:11:6.5; postocellar area slightly elevated, 2.4 times broader than long, lateral furrow slightly broad and deep, divergent backward; head strongly narrowed behind the eyes in dorsal view, occipital carina complete. Antenna slender, 1.3 times longer than the head and thorax combined, 0.9 times as long as the abdomen; antennomere 2 as long as broad; antennomere 3, 1.6 times as long as antennomere 4 (25:16), 0.8 times as long as antennomeres 4 and 5 combined (25:31); antennomeres 4 to 8 weakly dilated and not compressed (Fig. 18). Mesoscutellum distinctly elevated, with a tapered apex, without carina, slightly higher than the top of the mesonotum in lateral view; mesoscutellar appendage with lower and obtuse carina; metascutellum without distinct carina; dorsal-posterior platform of mesepimeron as broad as the diameter of the middle ocellus; post corner of metepimeron round and without appendage; mesopleuron and metapleuron as shown in Fig. 19; the distance between the cenchri thrice the breadth of a cenchrus. Inner tibia spur of hind leg approximately 0.6 times the length of the metabasitarsus (11:18); metabasitarsus slender, slightly longer than following 4 tarsomeres combined (9:8); claw with inner tooth shorter than the outer tooth. Ovipositor sheath approximately 0.86 times as long as the metabasitarsus (31: 36), apical sheath slightly longer than basal sheath (17:14), apical margin slightly acute in lateral view (Fig. 20), setae on sheath strongly curved and dense in dorsal view (Fig. 21). Fore wing with vein cu-a joining cell 1M at basal fifth, vein 2r joining cell 2Rs at apical 3/7, vein 2r-m oblique, cell 2Rs slightly longer than cell 1Rs, petiole of anal cell as long as vein 1r-m, approximately 0.5 times as long as vein cu-a; petiole of anal cell in the hind wing approximately 1/3 times as long as vein cu-a, vein cu-a distinctly oblique. Lancet short, with 17 serrulae (Fig. 24), middle serrulae flat and each with 1 proximal tooth and 3 to 4 distal teeth, subbasal tooth very fine, annular spine bands broad, spine sparse, 8th to 10th serrulae as shown in Fig. 25.

Male. Body length 7.5 mm (Fig. 15); body color and structure similar to female, following parts white: palp largely, labrum, apical 4/5 of clypeus (Fig. 22), tibiae and tarsi of fore and middle legs entirely and all trochanters; outer side of the hind coxa entirely black; antenna slightly setiform, antennomere 2 slightly broader than long (Fig. 23); subgenital plate longer than broad, apical margin rounded; inner side of base of the harpe roundly extruded, weakly narrowed toward the apex (Fig. 26); penis valve as shown in Fig. 27.

Holotype female, China, Hubei, Yichang, Mt. Shennongjia, Guitouwan (31°28'N, 110°08'E; elev. 2 150 m), 25–28 May 2011, Ze-Jian Li leg. CSCS11022. Paratype 1 male, China, Hubei, Yichang, Mt. Shennongjia, Guitouwan (31°28'N, 110°08'E; elev. 2 150 m), 19 May 2012, Ze-Jian Li leg., CSCS12054.

Distribution. China (Hubei).

Etymology. The specific epithet of the new species is composed of *pseudo* and *femorata* because the new species is closely related to *M. femorata*.

Remarks. The new species is a member of the *tongi*-subgroup of the *sanguinolenta*-group and is similar to *M. femorata* Marlatt, 1898 from China (Shandong) and Japan. Compared with *M. femorata*, *M. pseudofemorata* is characterized by dorsal head dim, frons densely and coarsely punctured, without interspace between punctures; mesoscutellum distinctly elevated, with tapered protuberance, higher than the top of the mesonotum; posterolateral tergite 1 with distinct white maculae, connected and narrower toward the middle; sheath distinctly shorter than the metabasitarsus, not extended to the apex of the abdomen; lancet short, serrulae flat, subbasal teeth very fine. In *M. femorata*, dorsal head shiny, frons sparsely and shallowly punctured, interspaces between punctures obvious, mesoscutellum roundly elevated, without protuberance, as high as the top of the mesonotum; posterolateral tergite 1 with small white maculae, not connected toward the middle; sheath slightly shorter than metabasitarsus, distinctly extended to apex of abdomen, setae on sheath slightly curved in dorsal view; lancet slightly longer, serrulae clearly protruded, subbasal teeth clear.

4.3 *Macrophya huangi* Li & Wei, sp. nov. (Figs 28–40)

Female. Body length 12 mm. Body and legs mainly black, following parts white: base of mandibles, palp largely, labrum, clypeus, posterior margin of postocellar area, apical half of dorsal side of antennomere 3, dorsal side of 4 to 5, narrow lateral margin and broad posterior margin of the pronotum, outer side of the tegula, center of the mesoscutellum, cenchri, lateral areas of the metascutellum, lateral maculae of abdominal tergites 2 to 6, middle maculae of abdominal

segments 2 to 8 and 10, apices of all coxae, base of the outer side of hind tibia with an oval macula, all trochanters, basal margin and anterior side largely of fore femur, base and apical half of the anterior side of the middle femur, basal 2/5 and subbasal part of the hind femur with a small macula, anterior sides of fore and middle tibiae, subbasal 2/5 of dorsal side of hind tibia, tarsi largely of the fore and middle legs, apical half of the dorsal side of the hind basitarsus and dorsal side of the hind tarsomeres 2 to 5; hind femur and tibia largely black, with some reddish stripes. Body hairs pale yellowish brown, setae on sheath yellowish brown. Wings hyaline, without smoky macula; stigma and veins largely black brown (Fig. 28).

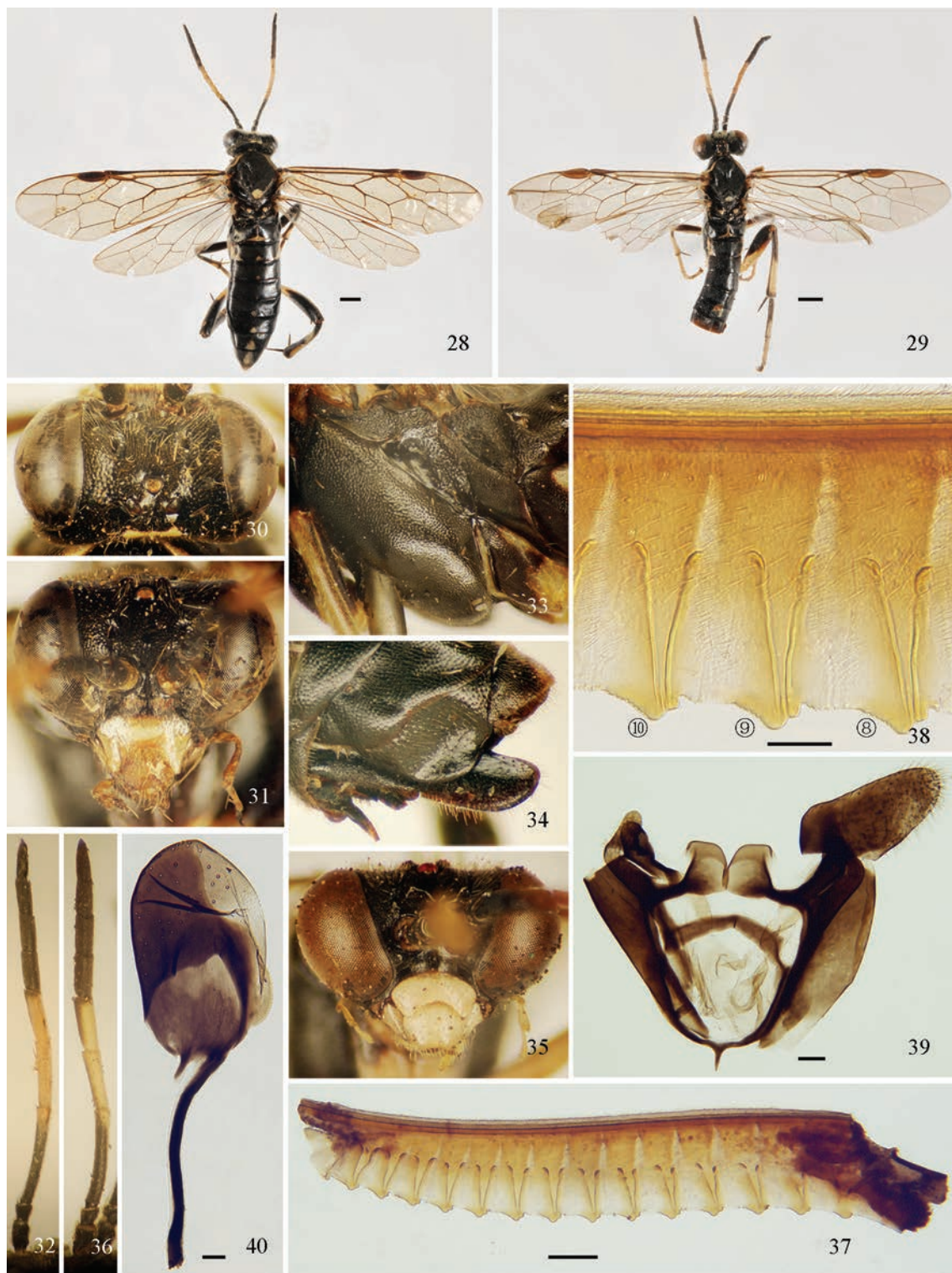
Dorsal head shiny; frons shallowly punctured, not rugose and dense, interspaces between punctures with fine microsculpture (Fig. 30); labrum and clypeus shiny, with some large, sparse punctures, surface weakly coriaceous. Mesonotum less shiny, punctures on mesonotum as minute and fine as punctures on the head and distinctly smaller than those on the mesoscutellum, interspaces with fine microsculpture; dorsum of the mesoscutellum shiny, with some sparse and large punctures; posttergite densely punctured; metascutellum dim, with distinct microsculpture and without distinct punctures; mesepisternum densely punctured, not rugose, interspaces with fine microsculpture; anepimeron dim, with dense wrinkles; posterior margin of the mesepisternum and anterior 2/5 of katepimeron smooth and shiny, without punctures or microsculpture; posterior 3/5 coarsely punctured and rugose; lateral region of the metepisternum dim, minutely and densely punctured, without smooth area; depressed area of the metepimeron with shallow and sparse punctures, but microsculpture distinct, elevated part of the metepimeron coarsely punctured (Fig. 33). Lateral sides of abdominal tergite 1 coarsely punctured, the rest of the abdominal tergite 1 sparsely punctured; other abdominal tergites with fine microsculpture and minute, indistinct punctures; surface of sheath coriaceous. Outer side of the hind coxa and femur densely punctured, interspaces shiny but with fine microsculpture.

Anterior margin of the labrum truncated; clypeus slightly elevated, distinctly broader than the distance between the lower corner of the eyes; lateral sides convergent forward, anterior margin half round and incised to approximately 1/2 length of the clypeus, lateral lobes acute and long (Fig. 31); malar space 0.5 times the diameter of the middle ocellus; frons strongly depressed, much below the top of the eyes in lateral view; middle fovea shallow but distinct; lateral foveae deep, furrow like; interocellar furrow distinct, postocellar furrow indistinct; POL:OOL:OCL = 5:11:7; postocellar area hardly elevated, 2.2 times broader than long, anterior half of the lateral furrows shallow, posterior half deep and clearly divergent backward; head strongly narrowed behind the eyes in dorsal view, occipital carina complete. Antenna slender, approximately 1.6 times longer than the head and thorax combined, and as long as the abdomen; antennomere 2 approximately 1.4 times as long as broad, antennomere 3 approximately 1.5 times as long as antennomere 4 (35:23), and approximately 0.9 times as long as antennomeres 4 and 5 combined (7:8), subapical antennomeres weakly compressed (Fig. 32). Mesoscutellum flat, without peak or carina, as high as the top of the mesonotum; posttergite and metascutellum with distinct middle carina; dorsal-posterior platform of mesepimeron as broad as the diameter of the lateral ocellus; posterior corner of metepimeron subquadrate, without appendage; mesopleuron and metapleuron as shown in Fig. 6; the distance between cenchri 2.5 times the breadth of a cenchrus. Inner tibial spur of hind leg 0.6 times the length of the metabasitarsus (34:53); metabasitarsus slender, approximately 1.06 times longer than the following 4 tarsomeres combined (53:50); claw with inner tooth shorter than the outer tooth. Ovipositor sheath distinctly shorter than the metabasitarsus (38:53), apical sheath slightly longer than the basal sheath, apical margin roundish in lateral view (Fig. 34). Fore wing with vein cu-a joining cell 1M at basal 1/3, vein 2r joining cell 2Rs at apical 3/8, and cell 2Rs as long as cell 1Rs; petiole of anal cell in the fore wing slightly shorter than vein 1r-m; petiole of anal cell in the hind wing as long as 1/2 times the length of vein cu-a. Lancet with 22 serrulae (Fig. 37), middle serrulae strongly protruding and middle serrulae each with 1 to 2 proximal and 5 to 6 distal teeth, subbasal teeth small, annular spine bands not broad, with sparse pilosity; 8th to 10th serrulae as shown in Fig. 38.

Male. Body length 9.5 mm (Fig. 29); body color and structure similar to female as follows: apices of all coxae, all trochanters, fore and middle femora, except outer sides with black maculae, fore and middle tibiae and tarsi entirely, basal 1/3 and ventral side of the hind femur, subbasal 1/2 of dorsal side of hind tibia, posterior margin of abdominal sternites 2 to 6 with broad, white maculae; anterior margin of clypeus shallowly incised to approximately 1/3 length, lateral corner subquadrate (Fig. 35); antenna as shown in Fig. 36; metascutellum entirely black; base of the outer surface of the middle and hind coxae without white macula; harpe approximately 2.2 times longer than broad, weakly narrowed toward the apex (Fig. 39); valvaceps approximately 1.6 times longer than broad, penis valve as shown in Fig. 40.

Holotype female, China, Hunan, Zhangjiajie, July 1986, collector unknown. Paratype 1 male, China, Hubei, Xingshan, Mt. Longmenhe (elev. 1300 m), 11 May 1994, Chinese Academy of Sciences, Jian Yao leg.

Distribution. China (Hubei, Hunan).



Figs 28–40. *Macrophya huangi* Li & Wei, **sp. nov.** Adult female, dorsal view. 29. Adult male, dorsal view. 30. Female head, dorsal view. 31. Female head, anterior view. 32. Female antenna. 33. Female mesopleuron and metapleuron. 34. Ovipositor sheath, lateral view. 35. Male head, anterior view. 36. Male antenna. 37. Lancet. 38. 8th–10th serrulae of lancet. 39. Gonoforceps. 40. Penis valve. Scale bars: 28, 29 = 1 mm, 28, 40 = 50 μ m, 37, 39 = 100 μ m.

Etymology. The species is named after Mr. Jian-Hua Huang.

Remarks. The color pattern of the antenna and legs shows that the new species is a member of the *depressina*-subgroup of the *sanguinolenta*-group. The new species is similar to *M. depressina* Wei, 2005 from China. Compared with *M. depressina*, *M. huangi* is characterized by lateral posterior of postocellar area black; posterior margin of pronotum with narrow white band; prescutum entirely black; center of mesoscutellum with white macula; mesoscutellar appendage entirely black; lateral area of metascutellum with white macula; lateral corner of abdominal tergite 1 black; posterior and lateral corners of abdominal tergite 2 with unconnected white macula; anterior margin of clypeus roundish and incised to approximately 1/2 of its length; apical 2/5 of the hind femur white; subbasal 2/5 in the dorsal side of the hind tibia white; anal cell in the fore wing with petiole slightly shorter than vein 1r-m, anal cell in the hind wing with petiole approximately 1/2 times the length of vein cu-a. In *M. depressina*, lateral posterior postocellar area with small white macula; posterior margin and lateral margin of pronotum with broad white band; prescutum with clearly long and white macula; mesoscutellum entirely white; mesoscutellar appendage largely white; metascutellum entirely white; lateral corner of abdominal segment 1 with clearly white macula; posterior and lateral corner of abdominal tergite 2 with connected white macula; anterior margin of clypeus arcuate; apical 1/3 of hind femur white; subbasal 1/2 of the dorsal side of hind tibia white; anal cell in the fore wing with a middle petiole and slightly longer than vein 1r-m, anal cell in the hind wing approximately 1/2 times slightly longer than 1/2 vein cu-a.

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